

WEST

Generate Collection

Print

Search Results - Record(s) 1 through 7 of 7 returned.☐ 1. Document ID: US 5729141 A Relevance Rank: 62

L5: Entry 3 of 7

File: USPT

Mar 17, 1998

US-PAT-NO: 5729141

DOCUMENT-IDENTIFIER: US 5729141 A

TITLE: Split gradient coils for MRI system

DATE-ISSUED: March 17, 1998

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|---------------------|---------|-------|----------|---------|
| Hass; Mathew Arnold | Andover | MA | | |
| Domigan; Paul | Andover | MA | | |

ASSIGNEE-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|-----------------------------------|--------|-------|----------|---------|-----------|
| Intermagetics General Corporation | Latham | NY | | | 02 |

APPL-NO: 8/ 616492

DATE FILED: March 19, 1996

INT-CL: [6] G01 V 3/00

US-CL-ISSUED: 324/318; 324/322

US-CL-CURRENT: 324/318; 324/322

FIELD-OF-SEARCH: 324/318, 324/322, 324/314, 324/300, 324/307, 324/309, 128/653.5

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

| PAT-NO | ISSUE-DATE | PATENTEE-NAME | US-CL |
|----------------|---------------|-----------------|---------|
| <u>5021739</u> | June 1991 | Yokosawa et al. | 324/248 |
| <u>5256972</u> | October 1993 | Keren et al. | 324/318 |
| <u>5365172</u> | November 1994 | Hrovat et al. | 324/309 |
| <u>5386191</u> | January 1995 | McCarten et al. | 324/318 |
| <u>5424643</u> | June 1995 | Morich et al. | 324/318 |
| <u>5572129</u> | November 1996 | Carlson | 324/318 |
| <u>5574373</u> | November 1996 | Pausch et al. | 324/318 |
| <u>5585724</u> | December 1996 | Morich et al. | 324/318 |

OTHER PUBLICATIONS

Carlson et al, "Design and Evaluation of Shielded Gradient Coils", 1992, pp. 191-206.

ART-UNIT: 225

PRIMARY-EXAMINER: Arana; Louis M.

ATTY-AGENT-FIRM: Helfgott & Karas, P C.

ABSTRACT:

In a magnetic resonance imaging system, wherein a subject to be imaged is supported within a bore of a magnet assembly and exposed to radio frequency (RF) energy emitted from an excitation coil, gradient coils and an RF screen are disposed within the region of the bore exteriorly to an excitation coil and are configured with a split or open region facing sections of the excitation coil for reduced image currents in the gradient coils and the RF screen from RF field generated by the excitation coil. The X gradient coil is reduced to two enlarged coil sections to the left and to the right of the bore. The two opposed sections of the X gradient coil, the two opposed sections of the Y gradient coil, and the opposed pairs of sections of the Z gradient coil are spaced apart at the top and the bottom of the bore for reduced interaction with the excitation coil section located at the top and the bottom of the bore. Thereby, the space between the excitation coil and the shield can be reduced. A more accurate image is developed with greater efficiency in terms of electric power.

8 Claims, 17 Drawing figures

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | IMC |
|-----------|-------|----------|-------|--------|----------------|------|-----------|-----------|-------------|--------|-----|
| Draw Desc | Image | | | | | | | | | | |

☐ 2. Document ID: US 5886548 A Relevance Rank: 61

L5: Entry 2 of 7

File: USPT

Mar 23, 1999

US-PAT-NO: 5886548

DOCUMENT-IDENTIFIER: US 5886548 A

TITLE: Crescent gradient coils

DATE-ISSUED: March 23, 1999

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-------------------|----------|-------|----------|---------|
| Doty; F. David | Columbia | SC | | |
| Wilcher; James K. | Columbia | SC | | |

ASSIGNEE-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|----------------------|----------|-------|----------|---------|-----------|
| Doty Scientific Inc. | Columbia | SC | | | 02 |

APPL-NO: 8/ 608906

DATE FILED: February 29, 1996

PARENT-CASE:

This application is a divisional of application Ser. No. 08/030,853, filed on Mar. 12, 1993, now U.S. Pat. No. 5,554,929 incorporated herein by reference.

INT-CL: [6] G01 V 3/00

US-CL-ISSUED: 324/318

US-CL-CURRENT: 324/318

FIELD-OF-SEARCH: 324/318, 324/322, 335/299, 335/300, 335/301, 128/653.5

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

| PAT-NO | ISSUE-DATE | PATENTEE-NAME | US-CL |
|----------------|----------------|------------------|---------|
| <u>2354331</u> | July 1944 | Polydoroff | 175/242 |
| <u>2498475</u> | February 1950 | Adams | 324/318 |
| <u>3237090</u> | February 1966 | Royer et al. | 323/45 |
| <u>3466499</u> | September 1969 | Beth | 313/84 |
| <u>3569823</u> | March 1971 | Golay | 324/300 |
| <u>3671902</u> | June 1972 | Westendorp | 336/84 |
| <u>3924211</u> | December 1975 | Joffe et al. | 335/284 |
| <u>4038622</u> | July 1977 | Purcell | 335/216 |
| <u>4165479</u> | August 1979 | Mansfield | 324/300 |
| <u>4514586</u> | April 1985 | Waggoner | 175/35 |
| <u>4642569</u> | February 1987 | Hayes et al. | 324/318 |
| <u>4646024</u> | February 1987 | Schenck et al. | 324/318 |
| <u>4646046</u> | February 1987 | Vavrek et al. | 335/301 |
| <u>4652824</u> | March 1987 | Oppelt | 324/318 |
| <u>4707663</u> | November 1987 | Minkoff et al. | 324/319 |
| <u>4733189</u> | March 1988 | Punchard et al. | 324/318 |
| <u>4737716</u> | April 1988 | Roemer et al. | 324/319 |
| <u>4766383</u> | August 1988 | Fox et al. | 324/318 |
| <u>4768008</u> | August 1988 | Purcell et al. | 335/318 |
| <u>4820988</u> | April 1989 | Crooks et al. | 324/318 |
| <u>4849697</u> | July 1989 | Cline et al. | 324/306 |
| <u>4876510</u> | October 1989 | Siebold et al. | 324/318 |
| <u>4885440</u> | December 1989 | Snoddy et al. | 324/318 |
| <u>4910462</u> | March 1990 | Roemer et al. | 324/318 |
| <u>4920011</u> | April 1990 | Ogawa et al. | 428/576 |
| <u>4926125</u> | May 1990 | Roemer | 324/318 |
| <u>4935714</u> | June 1990 | Vermilyea | 335/299 |
| <u>4954781</u> | September 1990 | Hirata | 324/318 |
| <u>4965521</u> | October 1990 | Egloff | 324/312 |
| <u>4978920</u> | December 1990 | Mansfield | 324/318 |
| <u>5036282</u> | July 1991 | Morich et al. | 324/318 |
| <u>5061891</u> | October 1991 | Totsuka et al. | 324/146 |
| <u>5084676</u> | January 1992 | Saho et al. | 324/318 |
| <u>5132618</u> | July 1992 | Sugimoto | 324/318 |
| <u>5132621</u> | July 1992 | Kang et al. | 324/322 |
| <u>5166619</u> | November 1992 | Ries | 324/318 |
| <u>5185577</u> | February 1993 | Minemura | 324/318 |
| <u>5198769</u> | March 1993 | Frese et al. | 324/318 |
| <u>5225782</u> | July 1993 | Laskaris et al. | 324/318 |
| <u>5235283</u> | August 1993 | Lehne et al. | 324/318 |
| <u>5278502</u> | January 1994 | Laskaris et al. | 324/318 |
| <u>5289128</u> | February 1994 | DeMeester et al. | 324/318 |
| <u>5296810</u> | March 1994 | Morich | 324/318 |
| <u>5349297</u> | September 1994 | DeMeester et al. | 324/318 |
| <u>5406204</u> | April 1995 | Morich et al. | 324/318 |
| <u>5424643</u> | June 1995 | Morich et al. | 324/318 |
| <u>5489848</u> | February 1996 | Furukawa | 324/318 |
| <u>5554929</u> | September 1996 | Doty et al. | 324/318 |

FOREIGN PATENT DOCUMENTS

| FOREIGN-PAT-NO | PUBN-DATE | COUNTRY | US-CL |
|----------------|---------------|---------|-------|
| 304126 | February 1989 | EPX | |
| 586983 | March 1994 | EPX | |
| 4029477 | April 1991 | DEX | |
| 54-3879 | February 1979 | JPX | |
| 2050062 | December 1980 | GBX | |

OTHER PUBLICATIONS

E.C. Wong et al., Magnetic Resonance in Medicine, vol. 21, 1 Sep. 1991, pp. 39-48.
V. Bangert et al., Journal of Physics E: Scientific Instruments, vol. 15, 1 Feb. 1982, pp. 235-239.
J.P. Boehmer et al., Journal of Magnetic Resonance, vol. 83, 1 Jun. 1989, pp. 152-159.
Y. Bangert and P. Mansfield, J. Physics E 15, "Magnetic Field Gradient Coils for NMR Imaging," 235 (1982).
P. Mansfield and B. Chapman, J. Magnetic Resonance 66, "Active Magnetic Screening of Gradient Coils in NMR Imaging," 573-576 (Feb. 1986).
P. Mansfield and B. Chapman, J. Magnetic Resonance 72, "Multishield Active Magnetic Screening of Coil Structures in NMR," 211 (1987).
M.K. Stehling, R. Turner, P. Mansfield, Science 254, "Echo-Planar Imaging: Magnetic Resonance Imaging in a Fraction of a Second," 43 (1991).

ART-UNIT: 225

PRIMARY-EXAMINER: Arana; Louis M.

ATTY-AGENT-FIRM: Oppedahl & Larson

ABSTRACT:

A high-conductivity ceramic coil form with an internal water jacket is used to simplify water cooling for 3-axis MRI gradient coil configurations on a single cylindrical coilform. Crescent-shaped, axially aligned coils are symmetrically employed on either side of the axial symmetry plane to increase transversely the region of field linearity. These crescent coils may be used in conjunction with Golay-type coils for improved switching efficiency. Lead-filled copper tubing may be used to reduce acoustic noise from pulsed coils in high external magnetic fields.

13 Claims, 17 Drawing figures

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
|-----------|-------|----------|-------|--------|----------------|------|-----------|-----------|-------------|
| Draw Desc | Image | | | | | | | | |

KMIC

☐ 3. Document ID: US 5406204 A Relevance Rank: 57

L5: Entry 4 of 7

File: USPT

Apr 11, 1995

US-PAT-NO: 5406204

DOCUMENT-IDENTIFIER: US 5406204 A

TITLE: Integrated MRI gradient coil and RF screen

DATE-ISSUED: April 11, 1995

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|----------------------|---------------|-------|----------|---------|
| Morich; Michael A. | Mentor | OH | | |
| DeMeester; Gordon D. | Wickliffe | OH | | |
| Patrick; John L. | Chagrin Falls | OH | | |
| Zou; Xueming | Chesterland | OH | | |

ASSIGNEE-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|----------------------------|---------------|-------|----------|---------|-----------|
| Picker International, Inc. | Highland Hts. | OH | | | 02 |

APPL-NO: 8/ 080413

DATE FILED: June 21, 1993

PARENT-CASE:

The present application is a continuation-in-part of U.S. applications Ser. Nos. 07/942,521, filed Sep. 9, 1992, 07/859,152, filed Mar. 27, 1992, and 07/859,154, filed Mar. 27, 1992.

INT-CL: [6] G01 R 33/20

US-CL-ISSUED: 324/318

US-CL-CURRENT: 324/318

FIELD-OF-SEARCH: 335/266, 324/300, 324/307, 324/309, 324/310, 324/311, 324/312, 324/313, 324/314, 324/318, 324/319, 324/320, 324/322, 128/653.2, 128/653.5

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

| PAT-NO | ISSUE-DATE | PATENTEE-NAME | US-CL |
|----------------|---------------|-------------------|---------|
| <u>4587504</u> | May 1986 | Brown et al. | 335/216 |
| <u>4703275</u> | October 1987 | Holland | 324/318 |
| <u>4733189</u> | March 1988 | Punchard et al. | 324/318 |
| <u>4737716</u> | April 1988 | Roemer et al. | 324/319 |
| <u>4761612</u> | August 1988 | Holland et al. | 324/307 |
| <u>4871969</u> | October 1989 | Roemer et al. | 324/318 |
| <u>4978920</u> | December 1990 | Mansfield et al. | 324/318 |
| <u>5083085</u> | January 1992 | Morad | 324/318 |
| <u>5179338</u> | January 1993 | Laskaris et al. | 324/318 |
| <u>5278502</u> | January 1994 | Laskaris et al. | 324/318 |
| <u>5289128</u> | February 1994 | De Meester et al. | 324/318 |

FOREIGN PATENT DOCUMENTS

| FOREIGN-PAT-NO | PUBN-DATE | COUNTRY | US-CL |
|----------------|----------------|---------|-------|
| 2180943 | September 1985 | GBX | |

OTHER PUBLICATIONS

"Active Magnetic Screening of Gradient Coils in NMR Imaging", Mansfield, et al., Journal of Magnetic Resonance, 66, 573-576 (1986).
 "Active Magnetic Screening of Coils For Static and Time-Dependent Magnetic Field Generation in NMR Imaging", Mansfield, et al., J. Phys. E. Sci. Instrum. 19, 540-544 (1986).
 "Shielded Gradient Coils and Radio Frequency Probes for High-Resolution Imaging of Rat Brains", Jasinski, et al, Magnetic Resonance in Medicine, 24, 29-41 (1992).
 "A 60 cm Bore 2.0 Tesla High Homogeneity Magnet For Magnetic Resonance Imaging",

Bobrov, et al., IEEE Transactions on Magnetics, vol. MAG-23, No. 2, Mar. 1987.

ART-UNIT: 267

PRIMARY-EXAMINER: Tokar; Michael J.

ATTY-AGENT-FIRM: Fay, Sharpe, Beall, Fagan, Minnich & McKee

ABSTRACT:

The magnetic field assembly of a magnetic resonance imaging device includes an annular superconducting magnet (10) which is mounted within a toroidal vacuum vessel (24). A cylindrical member (26) defines a central bore through which the superconducting magnets generate a temporally constant primary magnetic field. A cylindrical, dielectric former (46) is mounted in the bore displaced a small distance from the cylindrical member. A radio frequency coil (32) is mounted within the cylindrical member defining a patient receiving examination region. An RF shield (34) is mounted around the exterior peripheral surface of the former. Primary gradient coils (40) are mounted around and potted to the exterior of the dielectric former around the RF shield. Gradient shield or secondary coils (44) are potted around an exterior of the cylindrical member within the vacuum chamber. As illustrated in FIG. 3, when unshielded gradient coils are used, the primary gradient coils and the RF shield are mounted around the outer diameter of the cylindrical member (26).

20 Claims, 3 Drawing figures

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
|-----------|-------|----------|-------|--------|----------------|------|-----------|-----------|-------------|
| Draw Desc | Image | | | | | | | | |

KMIC

☐ 4. Document ID: US 5311135 A Relevance Rank: 56

L5: Entry 7 of 7

File: USPT

May 10, 1994

US-PAT-NO: 5311135

DOCUMENT-IDENTIFIER: US 5311135 A

TITLE: Multiple tap gradient field coil for magnetic resonance imaging

DATE-ISSUED: May 10, 1994

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-----------------------|-----------|-------|----------|---------|
| Vavrek; Robert M. | Waukesha | WI | | |
| Myers; Christopher C. | Milwaukee | WI | | |

ASSIGNEE-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|--------------------------|-----------|-------|----------|---------|-----------|
| General Electric Company | Milwaukee | WI | | | 02 |

APPL-NO: 7/ 988986

DATE FILED: December 11, 1992

INT-CL: [5] G01V 3/00

US-CL-ISSUED: 324/318; 324/322

US-CL-CURRENT: 324/318; 324/322

FIELD-OF-SEARCH: 324/318, 324/322, 324/307, 324/309, 324/300, 128/653.5, 335/299, 335/296, 336/137, 336/150

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

| PAT-NO | ISSUE-DATE | PATENTEE-NAME | US-CL |
|----------------|---------------|------------------|---------|
| <u>4636728</u> | January 1987 | Compton et al. | 324/318 |
| <u>4646024</u> | February 1987 | Schenck et al. | 324/318 |
| <u>4656447</u> | April 1987 | Keim et al. | 335/216 |
| <u>4737716</u> | April 1988 | Roemer et al. | 324/319 |
| <u>4794338</u> | December 1988 | Roemer et al. | 324/39 |
| <u>4840700</u> | June 1989 | Edelstein et al. | 156/634 |
| <u>5130656</u> | July 1992 | Requardt et al. | 324/318 |
| <u>5227728</u> | July 1993 | Kaufman et al. | 324/318 |
| <u>5235279</u> | October 1993 | Kaufman et al. | 324/318 |

ART-UNIT: 267

PRIMARY-EXAMINER: Arana; Louis

ATTY-AGENT-FIRM: Quarles & Brady

ABSTRACT:

An NMR imaging system includes an apparatus for producing a magnetic field gradient within an imaging volume into which the object being imaged is placed. The relatively linear region of the magnetic field gradient is adjusted depending upon the size of the object. The apparatus comprises a source of a gradient signal and four saddle coils positioned in quadrant of a sheet that is wrapped around a cylindrical form. Each saddle coil has a spiral shaped conductive pattern on which are located a primary termination point and a pair of secondary termination points. A switch mechanism connects the four saddle coils in series with the source of a gradient signal, so that voltage from the gradient signal is applied between the primary termination point and a selected secondary termination point of each saddle coil. A control signal applied to the switch mechanism indicates selected secondary termination point and the signal varies according to the size of the object.

11 Claims, 9 Drawing figures

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC |
|------------|-------|----------|-------|--------|----------------|------|-----------|-----------|-------------|------|
| Drawn Desc | Image | | | | | | | | | |

☐ 5. Document ID: US 5372137 A Relevance Rank: 48

L5: Entry 5 of 7

File: USPT

Dec 13, 1994

US-PAT-NO: 5372137

DOCUMENT-IDENTIFIER: US 5372137 A

TITLE: NMR local coil for brain imaging

DATE-ISSUED: December 13, 1994

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|----------------|-----------|-------|----------|---------|
| Wong; Eric C. | Wauwatosa | WI | | |
| Hyde; James S. | Dousman | WI | | |

ASSIGNEE-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|-----------------------------------|-----------|-------|----------|---------|-----------|
| The MCW Research Foundation, Inc. | Milwaukee | WI | | | 02 |

APPL-NO: 8/ 006219
DATE FILED: January 19, 1993

INT-CL: [5] A61B 5/055, G01R 33/48

US-CL-ISSUED: 128/653.5; 324/309, 324/318
US-CL-CURRENT: 600/422; 324/309, 324/318

FIELD-OF-SEARCH: 128/653.2, 128/653.5, 324/309, 324/318, 324/322, 336/225

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

| PAT-NO | ISSUE-DATE | PATENTEE-NAME | US-CL |
|----------------|---------------|------------------|---------|
| <u>4680548</u> | July 1987 | Edelstein et al. | 324/318 |
| <u>4725781</u> | February 1988 | Roschmann | 324/318 |
| <u>4924184</u> | May 1990 | Yoda | 324/318 |
| <u>4939465</u> | July 1990 | Biehl et al. | 324/318 |
| <u>4992737</u> | February 1991 | Schnur | 324/318 |
| <u>5235279</u> | August 1993 | Kaufman et al. | 324/318 |

FOREIGN PATENT DOCUMENTS

| FOREIGN-PAT-NO | PUBN-DATE | COUNTRY | US-CL |
|----------------|---------------|---------|-----------|
| 5042123 | February 1993 | JPX | 128/653.5 |

OTHER PUBLICATIONS

An Efficient, Highly Homogeneous Radiofrequency Coil for Whole-Body NMR Imaging at 1.5T, Jour. of Magnetic Resonance, 63, 622-628 (1985), Hayes et al.
High-Resolution, Short Echo Time MR Imaging of the Fingers and Wrist with a Local Gradient Coil.sup.1, Radiology, vol. 181, No. 2, Nov. 1992, Wong et al.
Coil Optimization for MRI by Conjugate Gradient Descent, Mag. Resonance in Medicine, 21, 39-48 (1991), Wong et al.

ART-UNIT: 335
PRIMARY-EXAMINER: Pfaffle; K. M.
ATTY-AGENT-FIRM: Quarles & Brady

ABSTRACT:

A local RF and gradient coil for acquiring images of the human brain using fast NMR pulse sequences includes an end capped RF bird cage coil surrounded by a 3 axis gradient coil assembly. An RF shield is disposed between the RF coil and the gradient coils and it is divided into separate segments to reduce eddy currents induced by the changing gradient fields.

28 Claims, 11 Drawing figures

| Full | Title | Citation | Front | Review | Classification | Data | Reference | Sequences | Attachments |
|------------|-------|----------|-------|--------|----------------|------|-----------|-----------|-------------|
| Drawn Desc | Image | | | | | | | | |

KWIC

☐ 6. Document ID: US 6157276 A Relevance Rank: 46

L5: Entry 1 of 7

File: USPT

Dec 5, 2000

US-PAT-NO: 6157276

DOCUMENT-IDENTIFIER: US 6157276 A

TITLE: MRI magnet assembly with non-conductive inner wall

DATE-ISSUED: December 5, 2000

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------------|--------------|-------|----------|---------|
| Hedeen; Robert Arvin | Clifton Park | NY | | |
| Edelstein; William Alan | Schenectady | NY | | |
| El-Hamamsy; Sayed-Amr | Schenectady | NY | | |
| Herd; Kenneth Gordon | Niskayuna | NY | | |
| Ackermann; Robert Adolph | Schenectady | NY | | |

ASSIGNEE-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|--------------------------|-------------|-------|----------|---------|-----------|
| General Electric Company | Schenectady | NY | | | 02 |

APPL-NO: 9/ 134764

DATE FILED: August 14, 1998

INT-CL: [7] H01 F 6/00

US-CL-ISSUED: 335/216; 324/318, 62/51.1, 505/879, 505/893, 505/898

US-CL-CURRENT: 335/216; 324/318, 505/879, 505/893, 505/898, 62/51.1

FIELD-OF-SEARCH: 335/216, 335/296, 324/318, 324/319, 324/320, 62/51.1, 505/879, 505/892, 505/893, 505/898

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

| PAT-NO | ISSUE-DATE | PATENTEE-NAME | US-CL |
|----------------|----------------|-------------------|---------|
| <u>4492090</u> | January 1985 | Laskaris | 62/55 |
| <u>4642569</u> | February 1987 | Hayes et al. | 324/318 |
| <u>4771256</u> | September 1988 | Laskaris et al. | 335/301 |
| <u>4879515</u> | November 1989 | Roemer et al. | 324/318 |
| <u>4896128</u> | January 1990 | Wollan et al. | 335/299 |
| <u>4910462</u> | March 1990 | Roemer et al. | 324/318 |
| <u>4986078</u> | January 1991 | Laskaris | 62/51.1 |
| <u>5001447</u> | March 1991 | Jayakumar | 335/299 |
| <u>5034713</u> | July 1991 | Herd et al. | 335/216 |
| <u>5278502</u> | January 1994 | Laskaris et al. | 324/318 |
| <u>5489848</u> | February 1996 | Furukawa | 324/318 |
| <u>5530413</u> | June 1996 | Minas et al. | 335/216 |
| <u>5635839</u> | June 1997 | Srivastava et al. | 324/320 |

ART-UNIT: 282

PRIMARY-EXAMINER: Barrera; Ray

ATTY-AGENT-FIRM: Snyder; Marvin Stoner; Douglas E.

ABSTRACT:

An MR magnet assembly includes a cylindrical vessel for housing a superconducting magnet and having a vacuum between its inner and outer walls. The vessel defines a

magnet bore for receiving a patient to be imaged. A gradient coil assembly is mounted in the bore adjacent the inner wall of the magnet assembly. To reduce gradient coil noise, the inner wall is constructed of a non-conductive material which does not support eddy currents.

5 Claims, 5 Drawing figures

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
|------------|-------|----------|-------|--------|----------------|------|-----------|-----------|-------------|
| Drawn Desc | Image | | | | | | | | |

KMC

☐ 7. Document ID: US 5367261 A Relevance Rank: 43

L5: Entry 6 of 7

File: USPT

Nov 22, 1994

US-PAT-NO: 5367261

DOCUMENT-IDENTIFIER: US 5367261 A

TITLE: Shield for a magnetic resonance imaging coil

DATE-ISSUED: November 22, 1994

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|---------------------|----------|-------|----------|---------|
| Frederick; Perry S. | Waukesha | WI | | |

ASSIGNEE-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|--------------------------|-----------|-------|----------|---------|-----------|
| General Electric Company | Milwaukee | WI | | | 02 |

APPL-NO: 8/ 194798

DATE FILED: February 14, 1994

PARENT-CASE:

This application is a continuation of application Ser. No. 07/907,891 filed on Jul. 2, 1992 now abandoned.

INT-CL: [5] G01R 33/28

US-CL-ISSUED: 324/318; 324/322

US-CL-CURRENT: 324/318; 324/322

FIELD-OF-SEARCH: 324/318, 324/322, 324/300, 324/314, 324/320, 335/299, 335/301, 336/84R, 336/84C, 336/84M

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

| PAT-NO | ISSUE-DATE | PATENTEE-NAME | US-CL |
|----------------|----------------|------------------|---------|
| <u>4680548</u> | July 1987 | Edelstein et al. | 324/318 |
| <u>4692705</u> | September 1987 | Hayes | 324/318 |
| <u>4694255</u> | September 1987 | Hayes | 324/318 |
| <u>4694663</u> | September 1987 | Miller | 62/514R |
| <u>4712067</u> | December 1987 | Roschmann et al. | 324/318 |
| <u>4771256</u> | February 1988 | Laskaris et al. | 335/301 |
| <u>4871969</u> | October 1989 | Roemer et al. | 324/318 |
| <u>4879515</u> | November 1989 | Roemer et al. | 324/322 |
| <u>4952877</u> | August 1990 | Stormont et al. | 324/312 |
| <u>4990877</u> | February 1991 | Benesch | 324/318 |
| <u>4992736</u> | February 1991 | Stormont et al. | 324/309 |
| <u>5017872</u> | May 1991 | Foo et al. | 324/322 |
| <u>5132621</u> | July 1992 | Kang et al. | 324/318 |
| <u>5243286</u> | September 1993 | Rzedzian et al. | 324/318 |

FOREIGN PATENT DOCUMENTS

| FOREIGN-PAT-NO | PUBN-DATE | COUNTRY | US-CL |
|----------------|---------------|---------|---------|
| 0196511 | October 1986 | EPX | 335/301 |
| 9119994 | December 1991 | WOX | 324/318 |

ART-UNIT: 267

PRIMARY-EXAMINER: Arana; Louis

ASSISTANT-EXAMINER: Mah; Raymond Y.

ATTY-AGENT-FIRM: Quarles & Brady

ABSTRACT:

An NMR imaging apparatus includes an excitation coil with a plurality of conductive elements extending between two spaced-apart end loops to form conventional "birdcage" coil. A shield is provided to reduce interference between the excitation coil and gradient field coils. The shield comprises a first electrically conductive section having an open ring with a gap therein and a plurality of first members extending from the ring with each member terminating at a remote end. A capacitor is connected across the gap in the ring. A second electrically conductive section has another ring from which a like plurality of second members extend with each one terminating at a remote end. The remote end of each second member is spaced from a remote end of a corresponding one of the first members and a capacitor is connected across those remote ends.

15 Claims, 5 Drawing figures

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC |
|-----------|-------|----------|-------|--------|----------------|------|-----------|-----------|-------------|------|
| Draw Desc | Image | | | | | | | | | |

Generate Collection

Print

| Term | Documents |
|---|-----------|
| CONDUCTIVE.DWPI,TDBD,EPAB,JPAB,USPT,PGPB. | 739111 |
| CONDUCTIVES.DWPI,TDBD,EPAB,JPAB,USPT,PGPB. | 122 |
| ELEMENT.DWPI,TDBD,EPAB,JPAB,USPT,PGPB. | 2214606 |
| ELEMENTS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB. | 1861445 |
| (3 AND (CONDUCTIVE ADJ ELEMENT)).USPT,PGPB,JPAB,EPAB,DWPI,TDBD. | 7 |
| (L3 AND (CONDUCTIVE ADJ ELEMENT)).USPT,PGPB,JPAB,EPAB,DWPI,TDBD. | 7 |

Display Format:

[Previous Page](#)

[Next Page](#)

WEST

Generate Collection

Print

Search Results - Record(s) 1 through 8 of 8 returned.

- ☒ 1. Document ID: US 20020079897 A1 Relevance Rank: 82

L9: Entry 1 of 8

File: PGPB

Jun 27, 2002

PGPUB-DOCUMENT-NUMBER: 20020079897
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020079897 A1

TITLE: MRI apparatus

PUBLICATION-DATE: June 27, 2002

INVENTOR-INFORMATION:

| NAME | CITY | STATE | COUNTRY | RULE-47 |
|----------------------------------|-----------|-------|---------|---------|
| Ham, Cornelis Leonardus Gerardus | Eindhoven | | NL | |
| Konijn, Jan | Eindhoven | | NL | |

US-CL-CURRENT: 324/318; 324/322

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC |
|------|-------|----------|-------|--------|----------------|------|-----------|-----------|-------------|--------|------|
| Draw | Desc | Image | | | | | | | | | |

- ☒ 2. Document ID: US 6278275 B1 Relevance Rank: 65

L9: Entry 4 of 8

File: USPT

Aug 21, 2001

US-PAT-NO: 6278275
DOCUMENT-IDENTIFIER: US 6278275 B1

TITLE: Gradient coil set with non-zero first gradient field vector derivative

DATE-ISSUED: August 21, 2001

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------------|-------------|-------|----------|---------|
| Petropoulos; Labros S. | Solon | OH | | |
| Schlitt; Heidi A. | Chesterland | OH | | |

ASSIGNEE-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|----------------------------|------------------|-------|----------|---------|-----------|
| Picker International, Inc. | Highland Heights | OH | | | 02 |

APPL-NO: 9/ 419597
DATE FILED: October 18, 1999

INT-CL: [7] G01 V 3/00

US-CL-ISSUED: 324/318; 324/309, 324/320
 US-CL-CURRENT: 324/318; 324/309, 324/320

FIELD-OF-SEARCH: 324/318, 324/309, 324/307, 324/320, 324/300, 335/296

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

| PAT-NO | ISSUE-DATE | PATENTEE-NAME | US-CL |
|----------------|----------------|--------------------|---------|
| <u>4794338</u> | December 1988 | Roemer et al. | 324/39 |
| <u>5132618</u> | July 1992 | Sugimoto | 324/318 |
| <u>5296810</u> | March 1994 | Morich | 324/318 |
| <u>5736858</u> | April 1998 | Katznelson et al. | 324/318 |
| <u>5942898</u> | August 1999 | Petropoulos et al. | 324/318 |
| <u>5952830</u> | September 1999 | Petropoulos et al. | 324/318 |

ART-UNIT: 282

PRIMARY-EXAMINER: Oda; Christine

ASSISTANT-EXAMINER: Shrivastav; Brij B

ATTY-AGENT-FIRM: Fay, Sharpe, Fagan, Minnich & McKee, LLP

ABSTRACT:

A gradient coil assembly (22) generates substantially linear magnetic gradients across the central portion of an examination region (14). The gradient coil assembly (22) includes primary x, y, and z-gradient coils (62, 66, 68) which generate a gradient magnetic field (90) having a non-zero first derivative in and adjacent the examination region. Preferably, the gradient coil assembly (22) includes secondary, shielding x, y, and z coils which generate a magnetic field which substantially cancels, in an area outside a region defined by the shielding coils, a fringe magnetic field generated by the primary gradient coils. The existence of a non-zero first derivative in and adjacent the examination region eliminates aliasing effects attributable to the non-unique gradient field values on either side of a rollover point (82). The non-unique values of the gradient magnetic field adjacent the rollover point caused structure near the rollover point to overlay each other (FIGS. 7B, 8B). The unique non-linearity of the present gradient (90) adjacent the edges expands (magnifies) the image adjacent the edges (FIGS. 7A, 8A). Because the expansion is unique, distortions at the edges are readily and accurately mapped (52) back to linear.

17 Claims, 13 Drawing figures

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
|-----------|-------|----------|-------|--------|----------------|------|-----------|-----------|-------------|
| Draw Desc | Image | | | | | | | | |

KWIC

☐ 3. Document ID: US 6278276 B1 Relevance Rank: 54

L9: Entry 3 of 8

File: USPT

Aug 21, 2001

US-PAT-NO: 6278276

DOCUMENT-IDENTIFIER: US 6278276 B1

TITLE: Phased array gradient coil set with an off center gradient field sweet spot

DATE-ISSUED: August 21, 2001

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------------|--------|-------|----------|---------|
| Morich; Michael A. | Mentor | OH | | |
| Retropoulos; Labros S. | Solon | OH | | |

ASSIGNEE-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|----------------------------|------------------|-------|----------|---------|-----------|
| Picker International, Inc. | Highland Heights | OH | | | 02 |

APPL-NO: 9/ 441283

DATE FILED: November 16, 1999

INT-CL: [7] G01 V 3/00

US-CL-ISSUED: 324/318; 324/322

US-CL-CURRENT: 324/318; 324/322

FIELD-OF-SEARCH: 324/318, 324/322, 324/300, 324/306, 324/307, 324/309, 600/421, 600/422

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

| PAT-NO | ISSUE-DATE | PATENTEE-NAME | US-CL |
|----------------|----------------|--------------------|---------|
| <u>4794338</u> | December 1988 | Roemer et al. | 324/39 |
| <u>5132618</u> | July 1992 | Sugimoto | 324/318 |
| <u>5235279</u> | August 1993 | Kaufman et al. | 324/309 |
| <u>5278504</u> | January 1994 | Patrick et al. | 324/318 |
| <u>5296810</u> | March 1994 | Morich | 324/318 |
| <u>5736858</u> | April 1998 | Katznelson et al. | 324/318 |
| <u>5942898</u> | August 1999 | Petropoulos et al. | 324/318 |
| <u>5952830</u> | September 1999 | Petropoulos et al. | 324/318 |

ART-UNIT: 282

PRIMARY-EXAMINER: Arana; Louis

ATTY-AGENT-FIRM: Fay, Sharpe, Fagan, Minnion & McKee, LLP

ABSTRACT:

A gradient coil assembly (22) generates substantially linear gradient magnetic fields through an examination region (14). The gradient coil assembly (22) includes a pair of primary gradient coil sets (22a, 22b) and a pair of shield coil sets (23a, 23b) which are disposed in an overlapping relationship. One gradient coil set is displaced relative to the other gradient coil set such that the mutual inductance between the two is minimized. Preferably, the coil sets (22a, 22b, 23a, 23b) are asymmetric, such that the sweet spot of each coil is displaced from the geometric center of each coil. One primary gradient coil set (22a) is a high efficiency, high switching speed coil to enhance performance of ultrafast magnetic resonance sequences, while the second primary gradient coil set (22b) is a low efficiency coil which generates a high quality gradient magnetic field, but with slower switching speeds. By displacing one gradient coil set relative to the other, mutual inductance is minimized, which maximizes peak gradient, rise time, and slew rate, while dB/dt levels are minimized. Arranging asymmetric gradient coil sets in an overlapping, phased array reduces coil resistance, which increases duty cycle and reduces heat dissipation to eliminate extra costs for a cooling system.

26 Claims, 20 Drawing figures

| | | | | | | | | | |
|-----------|-------|----------|-------|--------|----------------|------|-----------|-----------|-------------|
| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
| Draw Desc | Image | | | | | | | | |

KWC

☐ 4. Document ID: US 20020050895 A1 Relevance Rank: 54

L9: Entry 2 of 8

File: PGPB

May 2, 2002

PGPUB-DOCUMENT-NUMBER: 20020050895
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020050895 A1

TITLE: Magnetic apparatus for MRI

PUBLICATION-DATE: May 2, 2002

INVENTOR-INFORMATION:

| NAME | CITY | STATE | COUNTRY | RULE-47 |
|------------------|--------------|-------|---------|---------|
| Zuk, Yuval | Haifa | | IL | |
| Katz, Yoav | Rehovot | | IL | |
| Katznelson, Ehud | Ramat Yishai | | IL | |
| Rotem, Haim | Mate Asher | | IL | |

US-CL-CURRENT: 335/216

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | RWMC |
|-----------|-------|----------|-------|--------|----------------|------|-----------|-----------|-------------|------|
| Draw Desc | Image | | | | | | | | | |

☐ 5. Document ID: US 6163240 A Relevance Rank: 54

L9: Entry 5 of 8

File: USPT

Dec 19, 2000

US-PAT-NO: 6163240
DOCUMENT-IDENTIFIER: US 6163240 A

TITLE: Magnetic apparatus for MRI

DATE-ISSUED: December 19, 2000

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------|--------------|-------|----------|---------|
| Zuk, Yuval | Haifa | | | ILX |
| Katznelson, Ehud | Ramat Yishai | | | ILX |
| Katz, Yoav | Rehovot | | | ILX |
| Rotem, Haim | Mate Asher | | | ILX |

ASSIGNEE-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|--------------------------------|---------------|-------|----------|---------|-----------|
| Odin Medical Technologies Ltd. | Yokneam Elite | | | ILX | 03 |

APPL-NO: 9/ 161336
DATE FILED: September 25, 1998

PARENT-CASE:

REFERENCE TO RELATED APPLICATIONS: This application claims priority of and the benefit of U.S. provisional application Ser. No. 60/059,659, filed Sep. 25, 1997.

INT-CL: [7] H01 F 5/00, G01 V 3/00

US-CL-ISSUED: 335/299; 324/318, 324/319, 324/320, 335/296, 335/302, 335/306
 US-CL-CURRENT: 335/299; 324/318, 324/319, 324/320, 335/296, 335/302, 335/306

FIELD-OF-SEARCH: 335/216, 335/296-306, 324/318-320, 600/410, 600/421, 600/422

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

| PAT-NO | ISSUE-DATE | PATENTEE-NAME | US-CL |
|----------------|----------------|------------------|---------|
| <u>H1615</u> | December 1996 | Leupold | |
| <u>4341220</u> | July 1982 | Perry | |
| <u>4608977</u> | September 1986 | Brown | |
| <u>4695802</u> | September 1987 | Zijlstra | 324/319 |
| <u>4829252</u> | May 1989 | Kaufman | |
| <u>4862086</u> | August 1989 | Maeda | |
| <u>4875485</u> | October 1989 | Matsutani | |
| <u>5134374</u> | July 1992 | Breneman et al. | |
| <u>5153517</u> | October 1992 | Oppelt et al. | 324/322 |
| <u>5241272</u> | August 1993 | Friedrich | 324/318 |
| <u>5304933</u> | April 1994 | Vavrek et al. | |
| <u>5332971</u> | July 1994 | Aubert | |
| <u>5365927</u> | November 1994 | Roemer et al. | |
| <u>5390673</u> | February 1995 | Kikinis | |
| <u>5410287</u> | April 1995 | Laskaris et al. | |
| <u>5428292</u> | June 1995 | Dorri et al. | |
| <u>5490509</u> | February 1996 | Carlson et al. | |
| <u>5570073</u> | October 1996 | Muller | |
| <u>5623241</u> | April 1997 | Minkoff | |
| <u>5675305</u> | October 1997 | DeMeester et al. | 335/302 |
| <u>5677630</u> | October 1997 | Laskaris et al. | |
| <u>5696449</u> | December 1997 | Boskamp | |

OTHER PUBLICATIONS

A description of , "HSP 50215 Harris Semiconductor Corporation, FI, U.S.A." 1 page, No Date.

A description of, "HSP 50214 Harris Semiconductor Corporation ,FI, U.S.A" 1page, No Date.

Faulkner et al., "Guidelines for Establishing a Virtual Reality Lab", IEEE Engineering in Medicine and in Biology, Mar. Apr. 1996 pp. 86-93.

ART-UNIT: 282

PRIMARY-EXAMINER: Gellner; Michael L.

ASSISTANT-EXAMINER: Barrera; Raymond

ATTY-AGENT-FIRM: Eitan, Pearl, Latzer & Cohen-Zedek

ABSTRACT:

Magnetic apparatus for MRI/MRT probes and methods for construction thereof are disclosed. One embodiment includes a pair of opposed magnet assemblies defining an open region therebetween, a transmitting RF coil having at least a portion thereof disposed within the open region, at least one receiving RF coil disposed within the open region and X,Y and Z gradient coils. At least one of the X,Y and Z gradient coils is disposed outside of the open region. Another embodiment of the apparatus includes a single magnet assembly having a first surface and a second surface opposing the first surface, a transmitting RF coil having at least a portion thereof opposing the first surface, at least one receiving RF coil and X,Y and Z gradient coils. At least one of the X,Y and Z gradient coils opposes the second surface. In another embodiment the magnet assembly

generates a permanent z-gradient magnetic field and therefore includes only X and Y gradient coils, at least one of which opposes the second surface. The apparatuses may also include one or more shim coils.

21 Claims, 24 Drawing figures

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
|-----------|-------|----------|-------|--------|----------------|------|-----------|-----------|-------------|
| Draw Desc | Image | | | | | | | | |

KMC

☒ 6. Document ID: US 5760584 A Relevance Rank: 52

L9: Entry 7 of 8

File: USPT

Jun 2, 1998

US-PAT-NO: 5760584

DOCUMENT-IDENTIFIER: US 5760584 A

TITLE: Shield for MR system RF coil provided with multiple capacitive channels for RF current flow

DATE-ISSUED: June 2, 1998

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|---------------------|----------|-------|----------|---------|
| Frederick; Perry S. | Waukesha | WI | | |

ASSIGNEE-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|--------------------------|-----------|-------|----------|---------|-----------|
| General Electric Company | Milwaukee | WI | | | 02 |

APPL-NO: 8/ 689948

DATE FILED: August 16, 1996

INT-CL: [6] G01 R 33/20

US-CL-ISSUED: 324/318

US-CL-CURRENT: 324/318

FIELD-OF-SEARCH: 335/301, 174/35R, 174/35MS, 324/300, 324/307, 324/309, 324/318

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

| PAT-NO | ISSUE-DATE | PATENTEE-NAME | US-CL |
|----------------|---------------|------------------|---------|
| <u>4871969</u> | October 1989 | Roemer et al. | 324/318 |
| <u>4879515</u> | November 1989 | Roemer et al. | 324/318 |
| <u>5381093</u> | January 1995 | Kawamoto | 324/318 |
| <u>5680046</u> | October 1997 | Ferderick et al. | 324/318 |

ART-UNIT: 221

PRIMARY-EXAMINER: O'Shea; Sandra L.

ASSISTANT-EXAMINER: Eisenberg; Michael

ATTY-AGENT-FIRM: Skarsten; James O. Pilarski; John H.

ABSTRACT:

An RF shield is provided to prevent coupling between the gradient coils and the RF coil

of an MR imaging system, wherein the RF field rotates around the RF coil axis. The shield includes a number of coaxial conductive cylinders, and further includes a plurality of cylinders formed of dielectric material, each dielectric cylinder positioned between adjacent conductive cylinders. Each conductive cylinder is formed from sheets of copper, each sheet having a pattern of conductive loops formed therein, and each loop having an associated gap to prevent induction of eddy currents therein by gradient magnetic fields produced by the MR system gradient coils. The number of conductive cylinders, and the angular orientation thereof with respect to one another, are selected to provide a plurality of closed paths for RF image current induced by the RF field, wherein respective closed paths are established by capacitive coupling between a given conductive loop of a given conductive cylinder, and conductive loops in other of the conductive cylinders.

11 Claims, 7 Drawing figures

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KMC |
|------------|-------|----------|-------|--------|----------------|------|-----------|-----------|-------------|-----|
| Draw. Desc | Image | | | | | | | | | |

☐ 7. Document ID: US 5381093 A Relevance Rank: 49

L9: Entry 8 of 8

File: USPT

Jan 10, 1995

US-PAT-NO: 5381093

DOCUMENT-IDENTIFIER: US 5381093 A

TITLE: Magnetic resonance imaging apparatus

DATE-ISSUED: January 10, 1995

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------|-------|-------|----------|---------|
| Kawamoto; Hiromi | Yaita | | | JPX |

ASSIGNEE-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|--------------------------|----------|-------|----------|---------|-----------|
| Kabushiki Kaisha Toshiba | Kawasaki | | | JPX | 03 |

APPL-NO: 7/ 986352

DATE FILED: December 7, 1992

FOREIGN-APPL-PRIORITY-DATA:

| COUNTRY | APPL-NO | APPL-DATE |
|---------|----------|------------------|
| JP | 3-324780 | December 9, 1991 |

INT-CL: [6] G01 R 33/20

US-CL-ISSUED: 324/318

US-CL-CURRENT: 324/318

FIELD-OF-SEARCH: 324/300, 324/307, 324/309, 324/310, 324/311, 324/312, 324/313, 324/314, 324/318, 324/319, 324/320, 324/322, 128/653.5

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

| | | | |
|----------------|---------------|---------------|---------|
| PAT-NO | ISSUE-DATE | PATENTEE-NAME | US-CL |
| <u>4642569</u> | February 1987 | Hayes et al. | 324/318 |
| <u>4879515</u> | November 1989 | Roemer et al. | 324/318 |
| <u>4965521</u> | October 1990 | Egloff | 324/312 |

ART-UNIT: 267

PRIMARY-EXAMINER: Tokar; Michael J.

ATTY-AGENT-FIRM: Limbach & Limbach

ABSTRACT:

The MR imaging apparatus comprises an RF shield for interposed between the set of gradient coil and the RF coil. The RF shield is a cylinder which longitudinal axis is substantially coincident to the z-axis in which a static magnetical field is applied. The RF shield comprises two conductive sheet-members which are half-cylinder respectively and integrated into one cylinder. The sheet members have a plurality of generally C-shaped conductive loop portions respectively which are defined by nonconductive lines parallel to RF current flow induced therein by the RF coil and a single radial cut line respectively. The RF shield comprises a connecting means for electrically connecting the C-shaped conductive loop portions so that the C-shaped conductive loop portion in one of the sheet members and corresponding C-shaped conductive loop portion in the other sheet member can be formed into one circuit respectively and a current can circulate in said circuit in the same direction around a y-axis orthogonal to the z-axis.

21 Claims, 10 Drawing figures

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
|-----------|-------|----------|-------|--------|----------------|------|-----------|-----------|-------------|
| Draw Desc | Image | | | | | | | | |

KMC

☐ 8. Document ID: US 5872452 A Relevance Rank: 48

L9: Entry 6 of 8

File: USPT

Feb 16, 1999

US-PAT-NO: 5872452

DOCUMENT-IDENTIFIER: US 5872452 A

TITLE: Apparatus and method for the generation of gradient magnetic fields for high resolution NMR experiments

DATE-ISSUED: February 16, 1999

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|----------------------|--------|-------|----------|---------|
| Cory; David G. | Boston | MA | | |
| Lewandowski; Joel T. | Oxford | MA | | |

ASSIGNEE-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|--------------------------|-----------|-------|----------|---------|-----------|
| Bruker Instruments, Inc. | Billerica | MA | | | 02 |

APPL-NO: 8/ 794477

DATE FILED: February 4, 1997

INT-CL: [6] G01 V 3/00

US-CL-ISSUED: 324/321; 324/318

US-CL-CURRENT: 324/321; 324/318

FIELD-OF-SEARCH: 324/321, 324/320, 324/318, 324/314, 324/307, 324/309

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

| PAT-NO | ISSUE-DATE | PATENTEE-NAME | US-CL |
|----------------|---------------|---------------|---------|
| <u>5208536</u> | May 1993 | Cory | 324/321 |
| <u>5260657</u> | November 1993 | Lewis et al. | 324/321 |
| <u>5325059</u> | June 1994 | Doty | 324/321 |

OTHER PUBLICATIONS

Osamu Oishi et al., Institute for Molecular Science, Myodaiji, Okazaki 444, Japan, New PFG NMR Spectrometer with a Rotatable Quadrupole Coil for the Measurement of an Anisotropic Self-Diffusion Coefficient Tensor, Journal of Magnetic Resonance, XP 000633889, Series A 123, pp. 64-71 (1996), Article No. 0214.

Goran Odberg et al, Division of Physical Chemistry, The Royal Institute of Technology, S-100 44, Stockholm 70, Sweden, On the Use of a Quadrupole Coil for NMR Spin-Echo Diffusion Studies, Journal of Magnetic Resonance 16, XP-002064740, pp. 342-347 (1974).

R. Botwell, et al., Magic-Angle Gradient-Coil Design, Magnetic Resonance Center, University of Nottingham, Nottingham NG7 2RD United Kingdom, Journal of Magnetic Resonance, XP 000519712, Series A 115, pp. 55-59 (1995).

Seiichi Miyajima et al., Laboratory of Atomic and Solid State Physics, Cornell University, Ithaca, NY 14853-2501, USA, Pulsed-field-gradient stimulated-spin-echo NMR study of anisotropic self-diffusion in smectic Ad liquid crystal CBOOA.

ART-UNIT: 287

PRIMARY-EXAMINER: Arana; Louis

ATTY-AGENT-FIRM: Kudirka & Jobse, LLP

ABSTRACT:

A gradient magnetic field generator is provided for generating a spatially varying gradient magnetic field for use with a nuclear magnetic resonance spectroscopy probe having a rotatable sample container. The gradient field generator has a plurality of straight line conductive segments which lie parallel to one another and perpendicular to a plane within which lies a rotation axis about which the sample container rotates. The straight line conductive segments each conduct a current which generates a component of the overall gradient magnetic field. The conductive segments preferably lie in a cylindrical distribution about a stator within which the sample container is rotated. The appropriate currents for the conductive segments may be determined by finding a solution for the Jacobian which defines the magnetic field variations in the three-dimensional space of the stator. Finding an appropriate solution is simplified by presuming the cylindrical distribution of conductive segments and allowing restriction due to the size and shape of the stator, and the physical space between the stator and an inner surface of the probe housing.

19 Claims, 8 Drawing figures

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
|-----------|-------|----------|-------|--------|----------------|------|-----------|-----------|-------------|
| Draw Desc | Image | | | | | | | | |

KWC

Generate Collection

Print

| Term | Documents |
|---|-----------|
| THREE.DWPI,TDBD,EPAB,JPAB,USPT,PGPB. | 2002574 |
| THREES.DWPI,TDBD,EPAB,JPAB,USPT,PGPB. | 975 |
| GRADIENT.DWPI,TDBD,EPAB,JPAB,USPT,PGPB. | 171373 |
| GRADIENTS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB. | 40550 |
| COIL.DWPI,TDBD,EPAB,JPAB,USPT,PGPB. | 717215 |
| COILS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB. | 228330 |
| (8 AND ((THREE ADJ GRADIENT) ADJ COIL)).USPT,PGPB,JPAB,EPAB,DWPI,TDBD. | 8 |
| (L8 AND (THREE ADJ GRADIENT ADJ COIL)).USPT,PGPB,JPAB,EPAB,DWPI,TDBD. | 8 |

Display Format:

-

Change Format

[Previous Page](#)[Next Page](#)